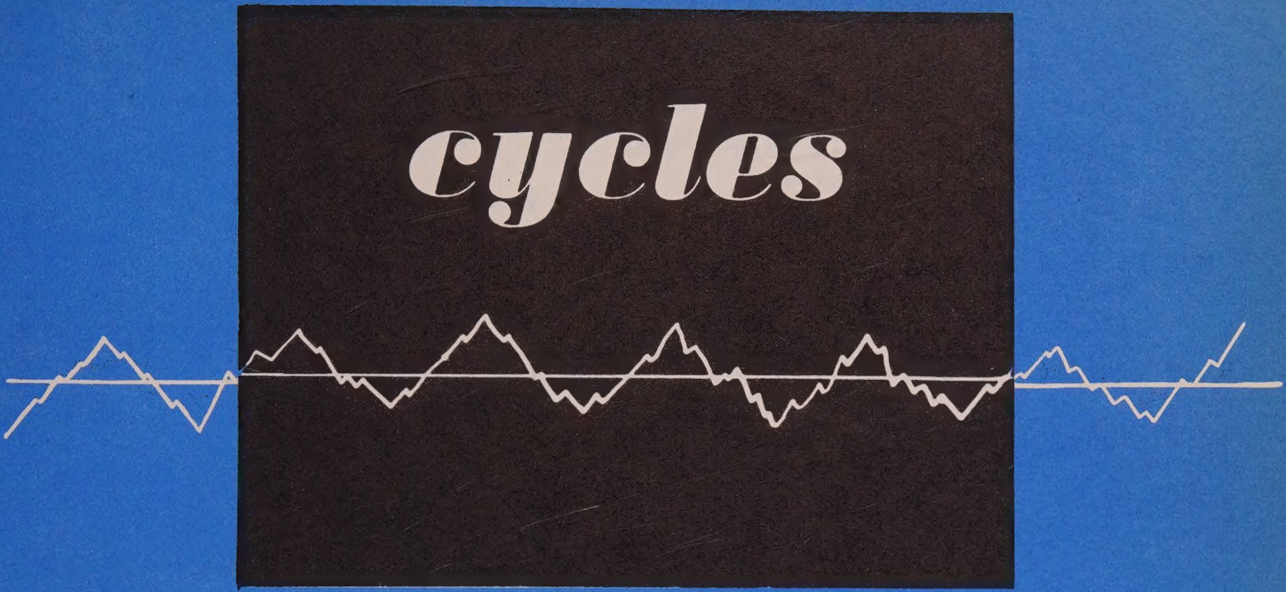
cycles



February 1955

FOUNDATION FOR THE STUDY OF CYCLES
New York, New York

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cycles
—a monthly report

The official Bulletin of the Foundation for the Study of Cycles

VOLUME VI NUMBER 2 FEBRUARY 1955

The Director's Letter

Dear Member:

The year 1954 was a good one for your Foundation. Important scientific discoveries were made. The membership increased. We took in more money than we spent. We have a small cash surplus. Seeds were planted which may bring forth fruit in 1955 and in later years.

Dr. Wing's Discoveries

The ranking achievements of the year are of course the cycle discoveries of Dr. Leonard Wing, Research Associate of the Foundation. Dr. Wing found out that the timing of an important 4.22-year temperature cycle comes later and later as you go from the poles toward the equator. In other words, this temperature cycle has a latitudinal slip, just like sunspots.

Dr. Wing has also discovered that the abundance of several kinds of bird varies in accordance with this same 4.22-year cycle. He found that with birds, as with temperatures, a latitudinal slip is present.

Dr. Wing's discoveries call for further research to see if other cycles in temperature behave the same way; to see if similar behavior is present in rainfall, barometric pressure, and other aspects of weather; to see if cycles in other phenomena such as tree ring widths, crop yields, disease, and possibly even economic affairs, show a corresponding slippage.

Report for The Year 1954

I should like to report to you about the activities of your Foundation for the year 1954.

The activities of the Foundation may be grouped into eight main categories as follows: 1. Scientist Memberships. 2. Contributing (Lay) Memberships. 3. Fellowships. 4. Scientific Research. 5. Commercial Research. 6. Educational Program. 7. Publication Program. 8. Administrative Details (details sometimes seem bigger than de dog, if you will permit a horrible pun).

Scientist Membership

We have 250 Scientist Members. These men pay no dues. They get the quarterly *Journal of Cycle Research* free. It is they upon whom hope for the future of the science of cycles lies.

To be eligible for Scientist Membership, a person must have published in a scientific journal at least one paper in regard to rhythmic fluctuation. This paper may be in any of the 36 kinds of natural or social science involved.

We could have 1250 scientist members just as easily as 250. It is merely a matter of having the time to invite them and having the money to send them the *Journal*.

It is necessary to send the *Journal* free to the Scientist Members. They are primarily geologists, astronomers, biologists, economists, geophysicists. They cannot afford to subscribe to journals outside their own discipline. The field of cycles is so broad that they cannot expect an issue devoted to their own subject more than once in eight or nine years. Yet, as proved by questionnaires, they really do want to continue to receive the *Journal*. I wish we could afford to send them the magazine *Cycles* as well.

Scientist Membership Plan The Hub

The Scientist Membership Plan is the hub around which the Foundation was intended to revolve. Basically, we were created to act as a clearing house among scientists.

You see, the scientist studying bird cycles, let us say, has no very good way to learn about the techniques or the findings of another scientist, studying perhaps the very same cycle in another field—ocean currents, or insect or marine life, or the thickness and thinness of rock strata or tree rings. And yet the other fellow may have found out things the bird man needs to know—and vice versa.

The plan was to enroll into scientific membership the 1200 or 1500 living scientists working in the field of cycles. Then to establish a *Journal* to which these men could contribute articles. The *Journal* would carry accounts of cycle discoveries in all fields of science. The *Journal*, sent free to all members, would serve as a clearing house. The plan also contemplated conferences of cycle scientists similar to those held some years ago under the aegis of the Carnegie Institution of Washington.

Well, we have the plan. We have enrolled a few scientists. We have the *Journal*. The *Journal* does go free to those who are enrolled. But that's about as far as the program has progressed.

Three Persons Needed

To put the plan over we need three persons:

First, we need a Scientific Membership Secretary. Such a person would invite the remaining cycle scientists to become members and would attend to the details of enrollment.

Second, we need money to send the *Journal* to the enrolled scientist members. (This takes about $1 a scientist a year.)

Third, we need an assistant editor of the *Journal*. Such a person would periodically abstract or list the cycle discoveries in the various disciplines involved. He or she would be assisted by Advisors already appointed by the leading scientific societies.

Among all our Contributing Members isn't there some one man or woman—such as you perhaps? or a wife, daughter, or sister?—who, as a labor of love, from his or her own home, would like to serve the science of cycles by being Secretary of the Scientific Membership Division? Isn't there someone else (you?) who would like to give $1 a scientist a year (tax deductable) to implement the work of this Secretary? And finally, isn't there a third person (you?) who, once a quarter, would like to abstract for the *Journal* the scientific papers relating to cycles in the various fields involved? These three persons are all we need!

Contributing Memberships

Contributing Members are persons who, like you, contribute $10 or more a year to help carry on the work of the Foundation. As of December 31, 1954 we had 4,253 such members. They receive the magazine *Cycles* without extra cost.

Fifty-seven wonderful people out of the 4,253 contributed *more* than the $10 minimum required to receive the magazine. The aggregate excess given by these persons amounted, in 1954, to nearly $1,100.

Because, as yet, we have no endowment, it is the contributing members on whom we chiefly rely for the funds with which to carry on our work.

During 1954 we lost 2,516 members due to death, moving without leaving a forwarding address, resignation, and non payment of dues. However, during the year we took in 2,762 new members. The net increase, 246, gave us a growth of about 6% compared with the beginning of the year.

Also—and this is a milestone—in 1954 the Membership Division operated at a profit. After all charges (except my time) the Division made about $750.

In a forthcoming report I'll give you detailed figures of receipts and disbursements.

The Fellowship Program

Some years back we established, on paper, three three-year Fellowships. These Fellowships were to encourage original work in our field. So far we have been able to finance only one of these Fellowships.

In addition, during 1954, two smaller grants were made. One was for $500 to help a young man get his Ph.D. Another, also for $500, was given by the L. Peter Cogan Foundation, for punch card tabulations needed to further the research of Dr. Wing.

Scientific Research

Outside of the work of Dr. Wing reported upon above, the scientific research of the Foundation consists of such work as I can sandwich into the spare time left over from administrative distraction. This work, like that of Dr. Wing, has been reported upon in the four issues of the *Journal of Cycle Research* (108 pages) and in the ten issues of *Cycles* (376 pages).

During 1954 we spent (in addition to my time) $1330 on research. Quite a sum with which to try to move the world!

There is hope for the scientific research program in the endowment fund now being promoted. Even though this campaign is not yet fully under way, several contributions have been pledged. As of the moment, prospects look encouraging.

The raising of this money will not be the work of any one man, no matter how able and willing. He must have helpers. If you are willing to help with time or money or both, please let me hear from you at once.

Commercial Research

During the past year we conducted commercial research for but one firm. The profit we made on this research job offset the loss from other activities and gave us the surplus for the year of which I spoke above.

Educational Program

Cycle analysis is something of an art as well as a science. During 1954, in an effort to increase knowledge of this sort, we inaugurated a correspondence course in cycle analysis. This course was offered to interested and qualified persons for $145 for 18 lessons. Fifty people enrolled.

The course gives us a gross revenue of $7,350, but it is not quite as rosy as it seems. Even though I contribute my time for the writing of the course and a review of all the papers, the expense of giving a course of this sort is terrific. Not only are there the printing and postage expenses involved and a very large amount of paid time for the routine correcting of papers but there are in addition the everlasting details. My assistant has already spent over 600 hours on the course and only 4 of the students are as much as 1/3rd through. Also, we must make allowance for a certain amount of bad debts. (We still have $1,300 outstanding from students who are paying on time.) I am hopeful that the Foundation will net perhaps $2,000 from the enterprise. Anyway, 50 more people will know something about cycle analysis.

Publication Program

This program has been touched upon in what has been said before.

What is the use of conducting research if it fails to achieve the light of day?

Our publications consists of (a) the quarterly *Journal of Cycle Research*, (b) the so called monthly report, *Cycles*, issued 10 times a year, and (c) the material prepared for the correspondence course students. (Eventually, some years hence, I hope to revise this last named material and issue it as a textbook of Cycle Analysis.)

In 1954 we lost about $350 on the *Journal*. The cost of *Cycles* is included in the cost of the Contributing Membership Plan, as outlined above.

Administrative Details

I have spoken here and there throughout the above report in regard to the innumerable and apparently inescapable details necessary for mere existence. It takes most of our effort just to stay alive. Very little is left over for the true purposes for which we were created. But isn't that true of a good many things? And, even though staying alive is something of a bother, how can you accomplish anything at all otherwise?

Buy Vanadium!!

I have just received the following letter:

Dear Sir:

When I was in Silver Sprin Md. I had your Cycles report. I thought I would buy some Vanedium as I had a Flash like lighning—Vanadium—simulare revelation like the late Swedenburg had.

But reading your Cycle report it looked we will have a big slump in the market comming, so I keeped off. Vanadium double itself—so did the other stocks in the market. ????? When is this slump comming. ?????

Sincerely,
Raymond M........

In reply I wrote as follows:

Dear Mr. M.....

I am truly sorry you did not make a fortune by buying Vanadium.

In connection with my remarks in *Cycles*, perhaps you mistake our function. We operate a scientific research agency; not a stock market tipster service.

I try to give you all the facts I can. However, in exchange for your $10 membership dues I am not under obligation to assist you in your stock market speculations. On the other hand I *am* under obligation to try to keep you from losing money through misunderstanding the results of our findings.

My projection of the stock market averages called for an advance from the year 1953 to the year 1954. It named 1954 as the year of high. But this work was so crude that it could easily be off one way or the other by as much as a year or even more. I was under obligation to point this out to you.

Suppose, relying on my projection that 1954 would be the high year, you had bought Vanadium and other stocks in 1953. Suppose that the market had gone *down*. And suppose that, in consequence, you had lost money. If I *hadn't* told you to take the projection with a grain of salt you could have held me morally responsible for the loss.

The stock market projection I made in 1944 now has 11 years of experience behind it. It was right again in forecasting a rise from 1953 to 1954. It now calls for a decline. Even though this forecast cannot be depended upon completely, if you had followed it from the time it was made up to now your gains would have been 185 times your losses. As I have said many times, this is partly a matter of luck. The projection used only cycles 4½-years long and longer. It cannot be expected to hit the nail on the head every time. But, whether the market goes up or down, the projection does tell you, now even more than a year ago, that this is a time for caution!

Ever cordially yours,

Edward R. Dewey
Director

January 12, 1955

Research

THE 5½-YEAR CYCLE IN CORN PRICES

BACK in 1875 Samuel Benner discovered a 5½-year cycle in corn prices. It has been coming true ever since. This article will tell you more about it.

Samuel Benner, you will remember, is the man who, in 1875, made that remarkable pig iron price forecast of which I have so often spoken. This forecast was made in a book called *Benner's Prophecies of Future Ups and Downs in Prices*. This book was reprinted by the Foundation for the Study of Cycles as Foundation Reprint No. 24. A few copies are still available (Price $1.00).

Benner's forecasts are perhaps the first cycle price forecasts ever made. If you had traded on his pig iron price forecast from the time it was made until World War II your gains would have been *thirty one times* your losses!

Well, this same man, in the same book, recorded his observation of a W-shaped 11-year cycle in corn prices. A W-shaped 11-year cycle is of course two 5½-year cycles every 11 years. However, Benner called it a 5-year—6-year cycle. He put his highs in 1864-5; 1869-70 (5 years later); 1875-6 (6 years later); 1880-1 (5 years later); etc: His lows in 1861-2; 1866-7 (5 years later); 1872-3 (6 years later); 1877-8 (5 years later); etc.[1]

Benner had only a few figures at his disposal. Moreover the techniques of his day were crude and inadequate. Benner was, therefore, not able to measure the length of his cycle more closely than I have indicated above. Nevertheless, if you had bought and sold corn annually from 1875-6 to date on the basis of this cycle as established and projected by Benner your gains would have been three and a quarter times your losses. Details are given in Table 1.

Table 1 shows 28 transactions from 1875-6 through 1952-3. Of these 28 transactions, 21 would have shown gains, 7 would have shown losses. Total gains would have been 782.8%. Total losses 240.5%. Net gains total 542.3%. This is an average gain of 7% a year.

Remember that these hypothetical gains come from buying and selling at average *annual* prices. Buying and selling during the proper *month* would surely have been much more profitable. Remember too that there are other cycles also present in these figures. A knowledge of them should increase trading profits materially.

The really important part of all of this is that the years in which to buy and to sell were picked out *in advance* by an old fellow who lived way back long before you were born.

Now let us look at this cycle with the benefit of hindsight and modern techniques. Is it exactly 5.5 years long or slightly longer or shorter? Is it non-symmetrical as Benner thought, or is it symmetrical. Do the crests and troughs come when Benner thought, or is the true timing slightly different? We must know all these things

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[1] THESE DATES WILL SEEM WRONG TO THOSE WHO HAVE READ BENNER'S BOOK, BUT THEY ARE NOT. BENNER SAYS "1864." HE DOES NOT SAY "1864-5." BUT THE PRICE HE QUOTES FOR 1864, FOR EXAMPLE, IS THE PRICE FOR 1864-5. EITHER HE DID NOT KNOW THAT PUBLISHED PRICES WERE FOR CROP YEARS BEGINNING NOVEMBER, OR HE SOUGHT TO SIMPLIFY HIS EXPOSITION.

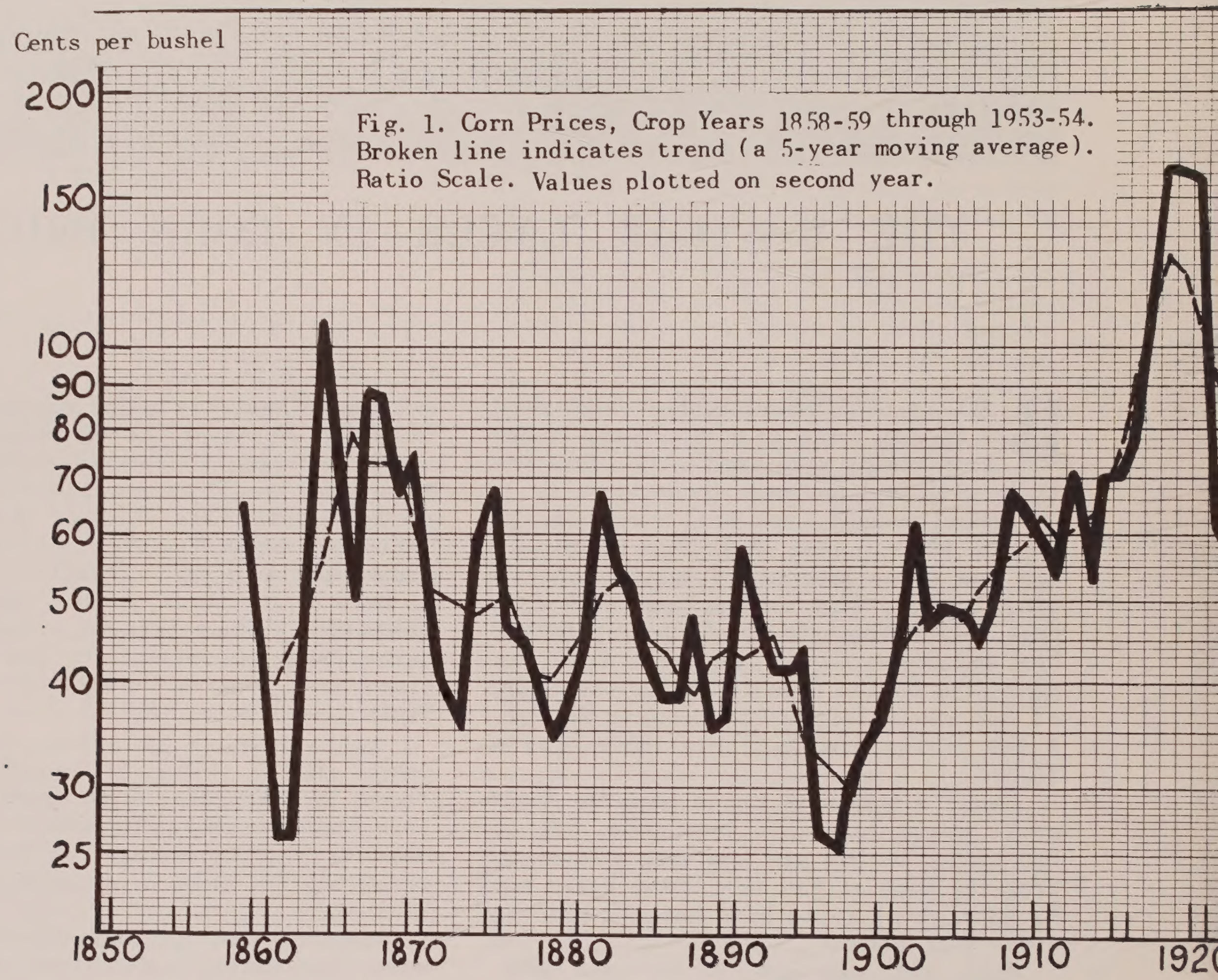


Fig. 1. Corn Prices, Crop Years 1858-59 through 1953-54. Broken line indicates trend (a 5-year moving average). Ratio Scale. Values plotted on second year.

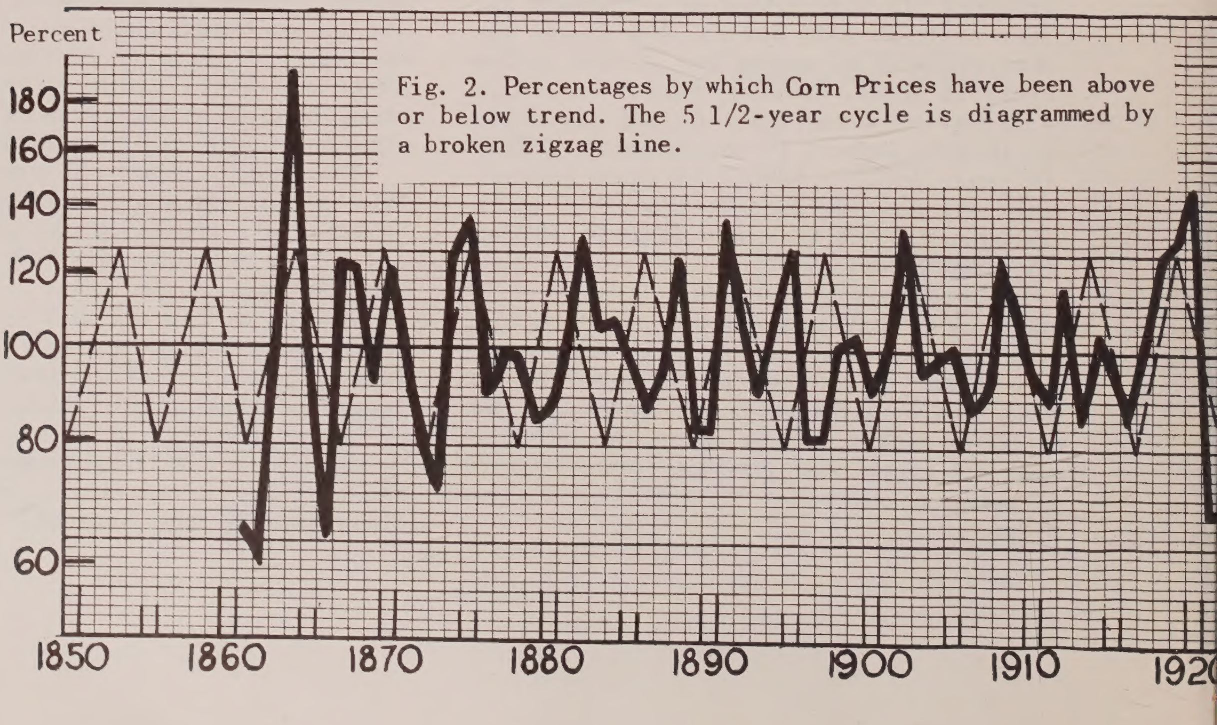
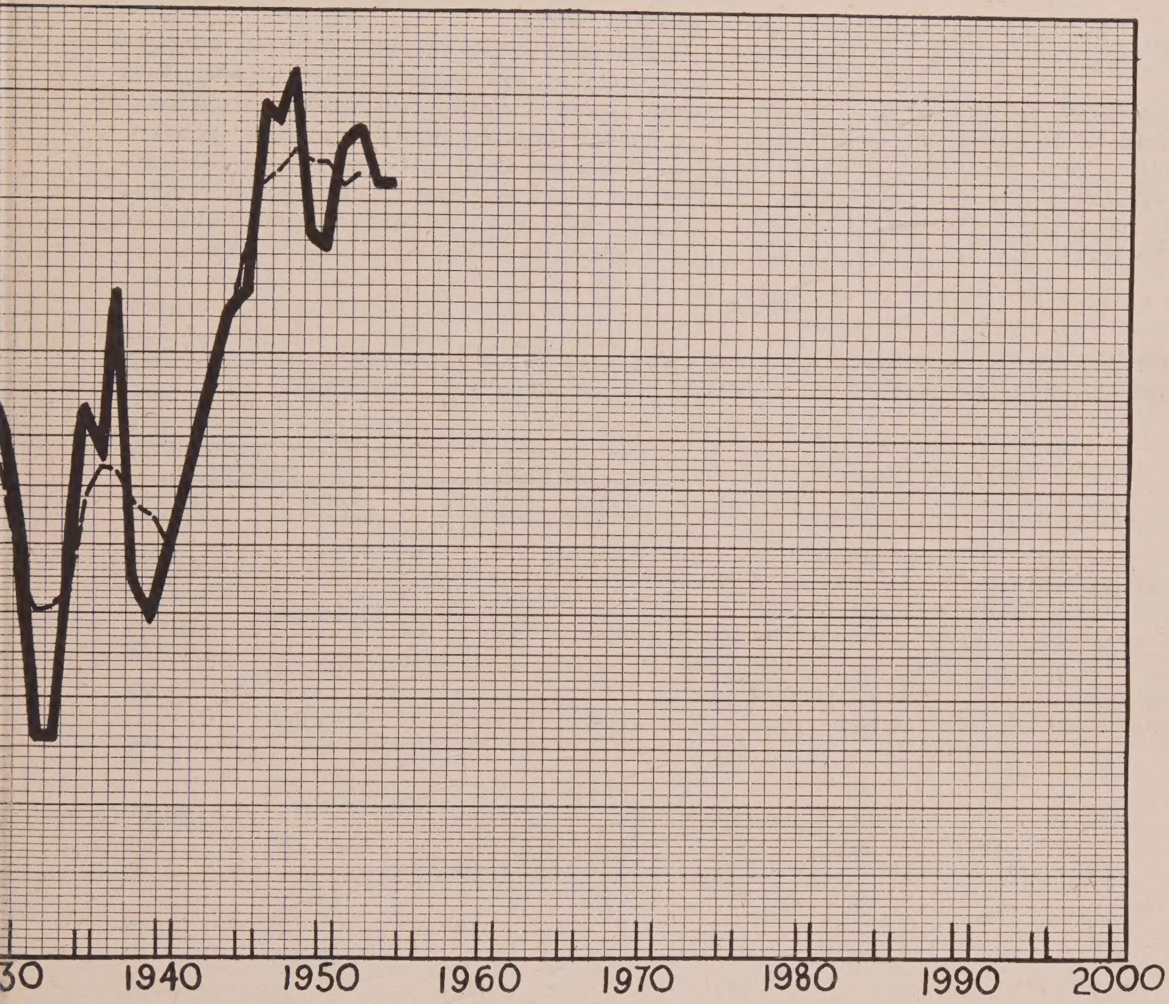
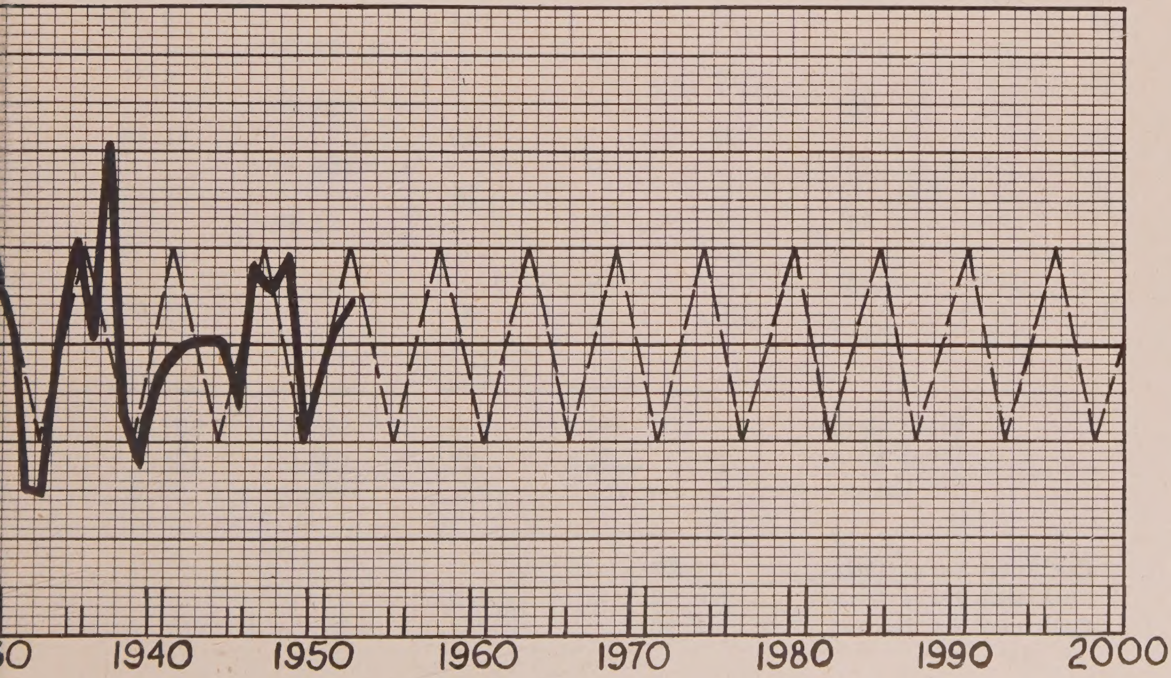


Fig. 2. Percentages by which Corn Prices have been above or below trend. The 5 1/2-year cycle is diagrammed by a broken zigzag line.


30
1940
1950
1960
1970
1980
1990
2000


0
1940
1950
1960
1970
1980
1990
2000

if we are to true up Benner's forecast so that it will continue to work for the next 77 years.

The proper way to answer all these questions would be to study the individual monthly figures from the first available quotation (January 1720, 1.58 shillings a bushel) right up to date. However, I do not have time to make such a study at the present time.

The next best way would be to compute quarterly or semi—annual averages and study them. I don't have time for that, either.

Annual figures would do, after a sort, but these are available only from 1857-58. However, lacking time to extend the series, let us see what annual figures 1857 to date show us. They are plotted below in

Table 1

Profit and loss from imaginary purchase and sale of corn according to Samuel Benner's Forecast of 1875. Prices are for crop years Nov.-Oct.

					Profit or Loss			
					Actual		Percent	
Crop Year	Buy at	Sell at	Short at	Cover at	Long	Short	Long	Short
1875-76			46					
1877-78	40			40		6		13.0%
1880-81		46	46		6		15.0%	
1883-84	54			54		-8		-17.4%
1886-87		38	38		-16		-29.6%	
1888-89	35			35		3		7.9%
1891-92		47	47		12		34.3%	
1894-95	44			44		3		6.4%
1897-98		30	30		-14		-31.8%	
1899-00	36			36		-6		-20.0%
1902-03		47	47		11		30.6%	
1905-06	44			44		3		6.4%
1908-09		65	65		21		47.7%	
1910-11	53			53		12		18.5%
1913-14		70	70		17		32.1%	
1916-17	111			111		-41		-58.6%
1919-20		159	159		48		43.2%	
1921-22	55			55		104		65.4%
1924-25		106	106		51		92.7%	
1927-28	101			101		5		4.7%
1930-31		60	60		-41		-40.6%	
1932-33	35			35		25		41.7%
1935-36		75	75		40		114.3%	
1938-39	49			49		26		34.7%
1941-42		80	80		31		63.3%	
1943-44	114			114		-34		-42.5%
1946-47		184	184		70		61.4%	
1949-50	131			131		53		28.8%
1952-53		158	158		27		20.6%	
1954-55				?		?		?
			Total Gains		334	240	555.3	227.5
			Total Losses		71	89	102.0	138.5
			Net Gains		263	151	453.3	89.0

Combined Total Gains,	782.8%
Combined Total Losses,	240.5%
Combined Net Gains	542.3%

Fig. 1.

Benner's 5½-year cycle can be seen by inspection. Whether it is also present in the figures prior to 1857-58 I do not know.

You can see the cycle better if you remove trend. Trend is shown by the broken line in Figure 1. To remove trend you merely express the actual prices as percentages above or below trend. This has been done. The results are charted in Figure 2. A perfectly regular 5½-year cycle has been added by means of a broken line. The regular or ideal cycle will aid your eye so that you can more easily see when the 5½-year pattern has dominated and when it has not.

As nearly as I can tell from the annual figures, the cycle is 5.5 years long or a shade under—perhaps 5.47 years. This surprised me, for I expected it to be a little *over* 5½ years. (A similar cycle in cotton prices, which I thought was the same cycle, has been measured as 5.57 years long.

The cycle crests ideally midway between July and August of 1864, every 5½ years thereafter. This puts the next crest of this cycle ideally at the end of January 1958. The current trough falls ideally between April and May of 1955. In other words, right now.

The strength of this cycle, on the average, after allowance for the excessive values during the Civil War, is 11.1% above trend at time of crest, 10.0% below trend at time of trough. This is an overall move of about 21% of trend in 2 3/4 years.

Monthly figures should give strength at least a sixth bigger. This would be a total of 27% of trend up or down every 2 3/4 years, or about 10% of trend a year. I shall investigate monthly figures for you, 1900 to date, as soon as I can, to see if they actually do this.

In summary, it is hard to imagine a cycle of this strength and regularity, the length and timing of which was *proclaimed in advance*, which came true merely as a matter of chance. It seems as if Samuel Benner really discovered something. Now the big questions is, what causes it?

E.R.D.

NON-SYMMETRICAL CYCLES

NOT all cycles are symmetrical. Some cycles have waves that go down quicker than they go up (or vice versa). It might take only a year, let us say, to go from top to bottom; two years to crawl back up to a top again.

Some of these non-symmetrical cycles obey a very important and interesting mathematical law. One leg may be related to the other leg, or to the whole cycle, by the ratio .618.

This numerical value is quite prevalent in nature. It is known as the law of leaf arrangement (phyllotaxis). It governs not only the arrangements of leaves on the stem of a plant, but the shape of various natural curves. The curve of the conch shell, the curve of the horn of the rhinoceros, and the curve of the toe nails of a canary bird, to mention but a few other examples, are all governed by this .618 relationship.

The simplest approximate expression of this law is a series of numbers obtained by adding whole numbers as follows: Starting with zero and one, and their sum, make each following term equal to the sum of the two previous terms.

It "don't tell so good" but it is really very simple. You can see this from the following illustrations:

1st term	0	
2nd term	1	
3rd term	1	(1 + 0)
4th term	2	(1 + 1)
5th term	3	(1 + 2)
6th term	5	(2 + 3)
7th term	8	(3 + 5)
8th term	13	(5 + 8)
9th term	21	(8 + 13)
10th term	34	(13 + 21)
11th term	55	(21 + 34)
12th term	89	(34 + 55)
13th term	144	(55 + 89)
	etc.	

The series of numbers thus obtained is called the Fibonacci (pronounced Fee-be naatch'-ee) series, after a famous Italian mathematician. Each of these terms is 1.6180 of the previous term, as nearly as you can get with whole numbers. Thus 5 is 1.666 of 3; 8 is 1.600 of 5; 13 is 1.625 of 8; 89 is 1.6182 of 55; 144 is 1.6179 of 89, and so on.

I could give you countless examples of the operation of the law in nature. In the Norway spruce, for instance, in over 90% of the cases, you can trace five rows of scales winding steeply up the cone in one direction, three rows winding less steeply the other way. With the common English larch the normal number is 8 rows in one direction, five in the other (the American larch has three rows one way and five the other). In the daisy you can trace 13 rows in one direction and 21 in the other; or 21 rows and 34 rows. In the sunflower in one and the same species you can trace 34 rows one way and 55 rows the other or, 55 rows and 89 rows, and for a great big one, 89 rows and 144 rows).

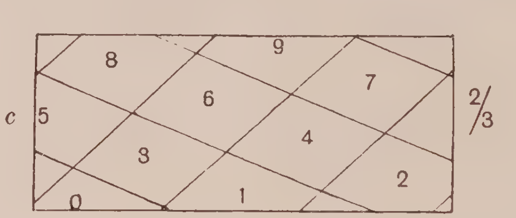
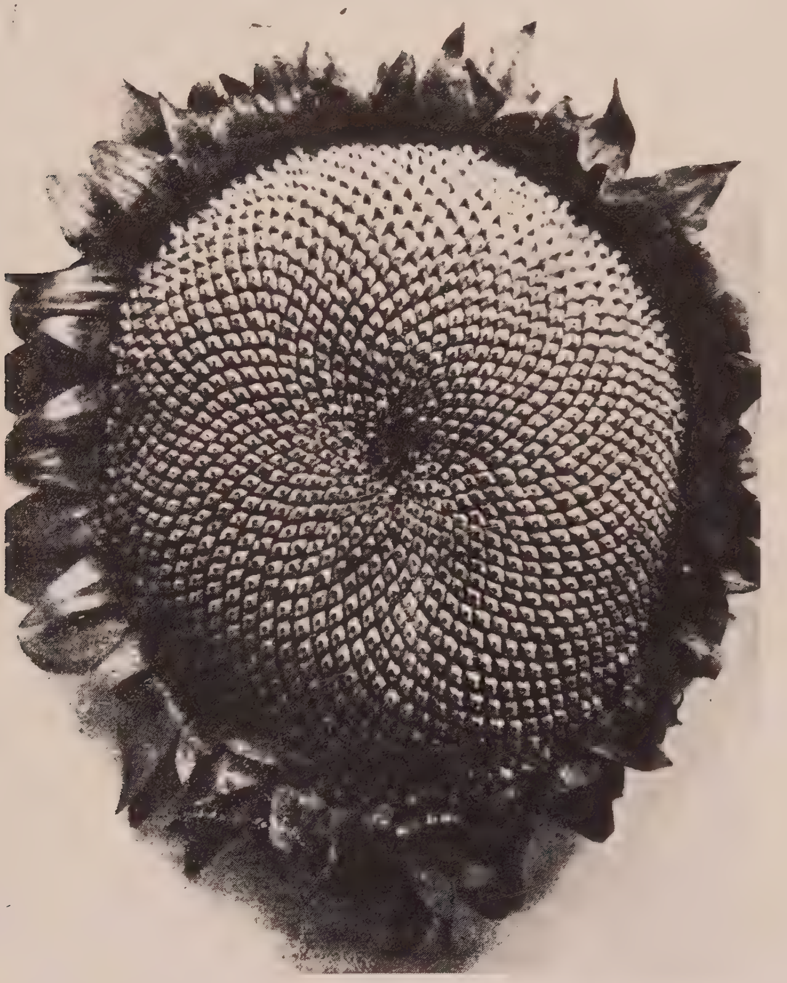


Diagram to illustrate the law of leaf arrangement with growth two units in one direction, three in the other. From Sir D'Arcy Thompson's *On Growth and Form.*

A friend of mine, Mr. Monroe Jacobs, has noticed that these intervals can often be applied to *time.* Historical events fit into the pattern. If you have two important



A giant sunflower. The pattern made by the seeds illustrates the law of leaf arrangement. If you count you will see that there are 34 swirls proceeding from the center in a clockwise direction; 55 swirls proceeding from the center anticlockwise.

This law of leaf arrangement sometimes governs the relationship between the legs of nonsymmetrical cycles. From Sir D'Arcy Tompson's *On Growth and Form.*

events separated by a certain distance in time there is often another one 1.618 or .618 time units later. Indeed there are other applications—some related to measures of human emotional reactions which point to these ratios as a possible key measure of change in many forms.

I tell you all these things so that you can know that this relationship is quite basic. To Kepler it was a symbol of Creation, I think of it as the law of growth and decay, for both processes seem to go on simultaneously.

When you find a non-symmetrical cycle which conforms to this law I think you can assume that the behavior is probably not mere chance.

E.R.D.

The 9.6-Year Cycle in the Acreage of Wheat

AS YOU know from previous reports, there is a 9.6-year cycle in the acreage of wheat harvested for grain. This cycle was discovered in data up to and including 1949. Five more years of figures are now available. They show the cycle working out in accordance with expectations.

This 9.6-year cycle is clearly present in wheat acreage from about 1877 to date. Prior to 1877 it is not so clear. The cycle was badly distorted by World War I. World War II, however, fitted into the pattern.

You can see all this for yourself by even casual inspection of Fig. 1 below. To aid your eye I have added a regular 9.6-year zigzag. The heavy line from 1949 forward shows how the cycle has unfolded since discovery.

As you can see, wheat acreage harvested is now due to increase until about 1958- It is then due to decrease until about 1962

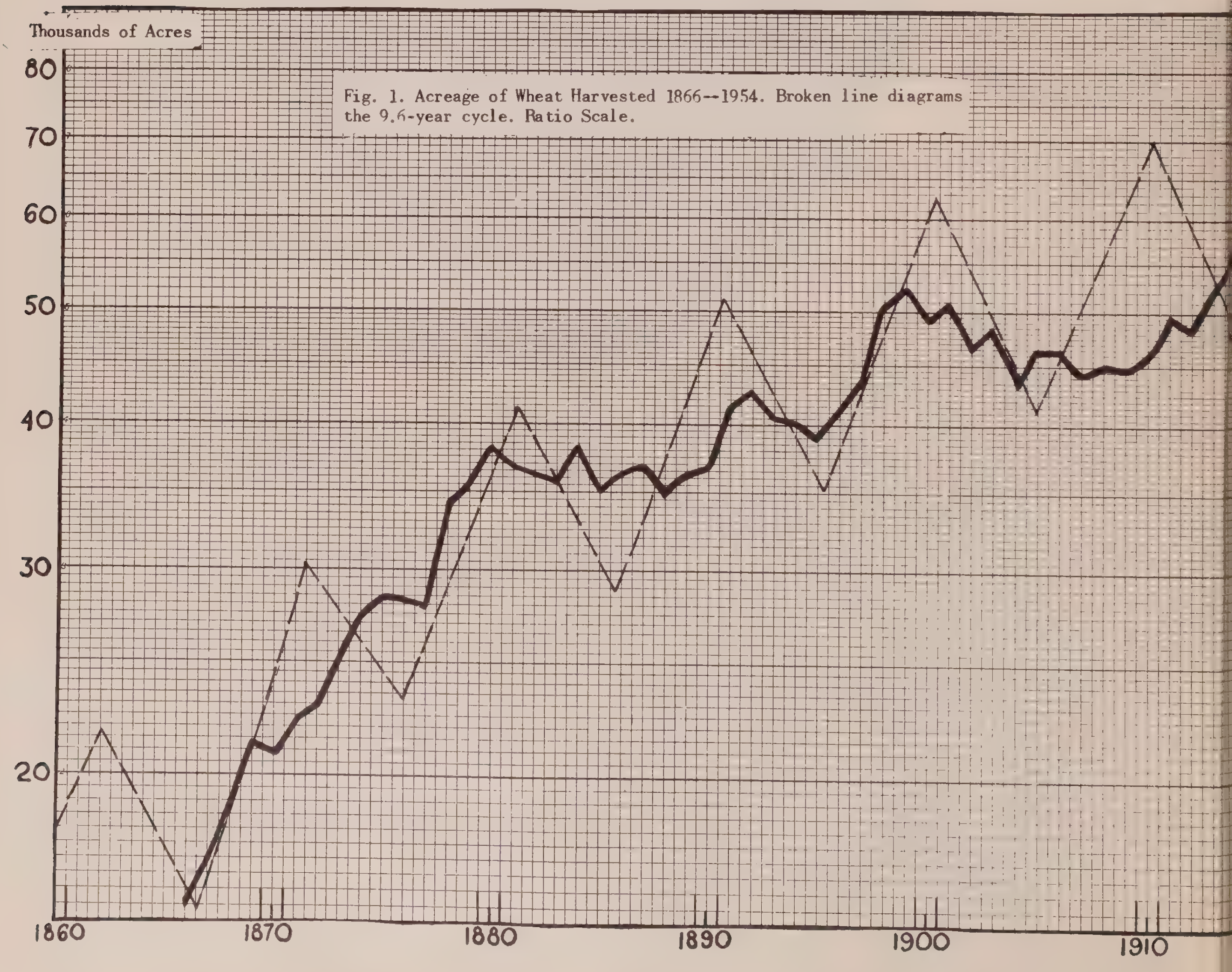


Fig. 1. Acreage of Wheat Harvested 1866--1954. Broken line diagrams the 9.6-year cycle. Ratio Scale.

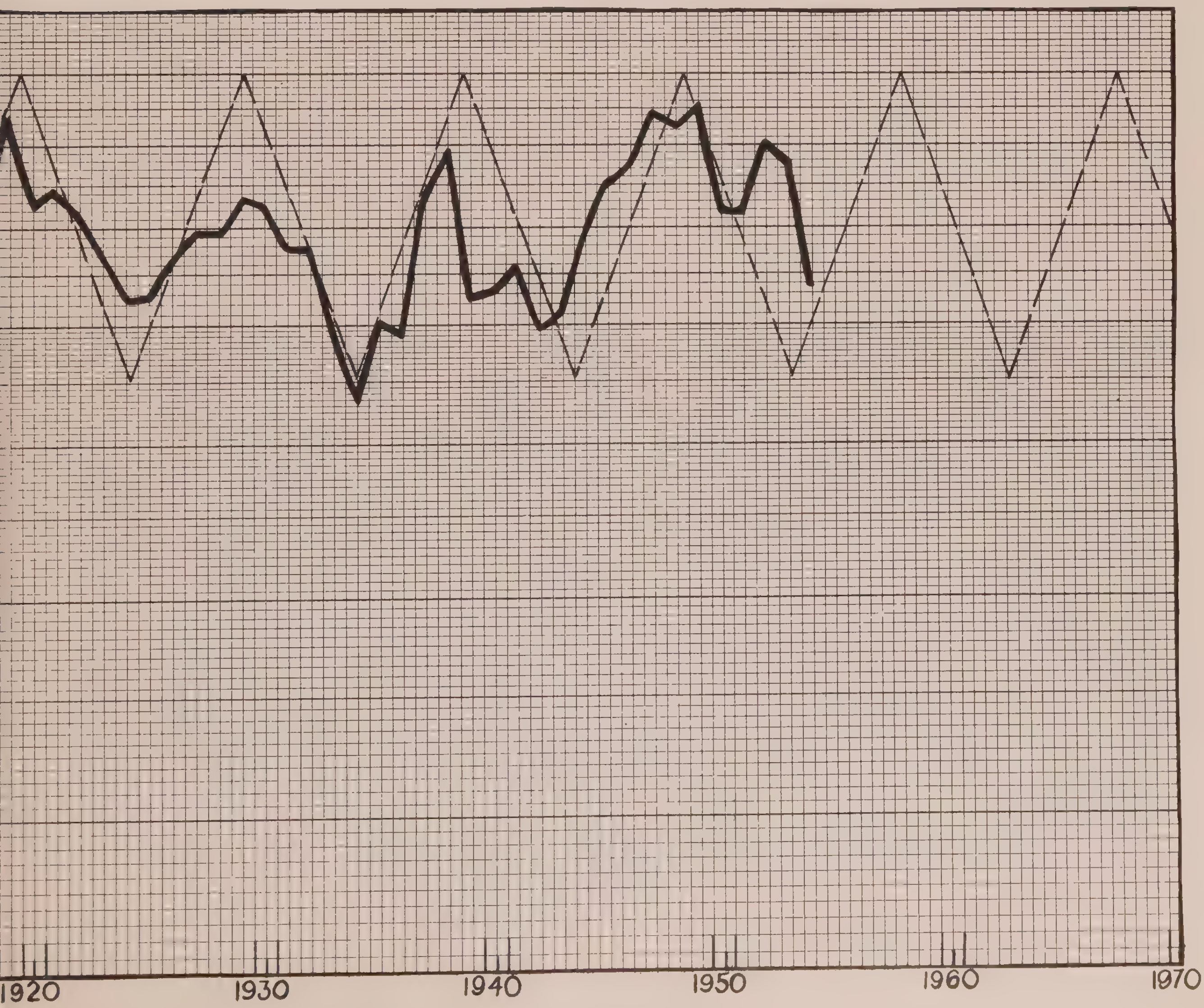
or '63. Then to go up again.

A 9.6-year cycle is well established in biological data. It governs the abundance of snowshoe rabbits and Canadian Lynx. It dominates the number of Atlantic Salmon. It seems to influence the number of chinch bugs in Illinois. It seems to control the abundance of wolves, fishes, martins, muskrats, and other mammals in Canada. It has been reported in the incidence of heart disease in Northeastern United States. It has been found in rainfall in India and in in the thickness and thinness of tree rings in Arizona. However, I have never found it in human activity. Why is it present in the acreage of wheat harvested?

The acreage of wheat harvested is man made, except as wheat planted is destroyed by adverse weather. Insofar as figures are available the acreage of wheat *planted* fluctuates in more or less the same way as wheat *harvested*. The 9.6-year cycle in wheat acreage harvested is therefore man made, at least in part. But, in deciding how many acres of wheat to plant do men act from economic considerations or because of soil conditions and/or weather prospects?

If the latter, one might suspect a 9.6-year rainfall or climatological factor. It is these I think that we should study first, if we are to trace a cause and effect ralationship.

E.R.D.



How it Came Out

THE 6-YEAR CYCLE IN YOUNGSTOWN SHEET AND TUBE COMPANY SALES

Summary: The 6-year cycle in Youngstown Sheet and Tube Company Sales is now on the way down. It suggests that sales in 1956 and 1957 are, ideally, likely to be about 15% below trend.

FOR as far back as figures are available, sales of the Youngstown Sheet and Tube Company act as if they had been influenced by a six-year cyclic force. In other words, in spite of many irregularities, sales tend to fluctuate in such a way that crests of the sales curve come about 6 years apart. Troughs of the sales curve come more or less midway between the crests.

This fact can be seen if you look at the curve plotted in Fig. 1. This curve shows gross dollar sales by years from 1923 through 1953. A series of arrows across the top of this chart at exact six year intervals will help you to see the 6-year cycle more easily.

Fig. 1 also shows you the *trend* of these figures. Unfortunately, until we have three more years of experience, we cannot know exactly what trend is doing at the present time.

Fig. 2 shows the percentages by which the actual sales have been above or below trend. This line stops in 1950 because we cannot know what trend is past that time.

The 6-year cycle has been diagrammed in Fig. 2 by means of a broken zigzag line.

I told you about the 6-year cycle in the sales of the Youngstown Sheet and Tube Company five years ago. The heavy line in Fig. 2 shows how the cycle has worked out since discovery.

Back in 1950, when I first told you about this cycle, I timed the crests at 1923 and every 6 years thereafter; troughs midway between crests. With 5 additional years of figures it now looks as if the cycle should be timed about ½ year later. Fig. 2 shows the revised timing. Revised timing puts the current crest of the ideal cycle midway between 1953 and 1954. The next trough of the ideal cycle will come halfway between 1956 and 1957. Of course the actual tops and bottoms are likely to be somewhat distorted.

Timing of previous waves has been quite regular. Of the 5 tops, 4 have come within half a year of perfect timing; 1 came a year and a half from perfection. Of the 4 bottoms that we can be sure about 2 came within half a year of perfect timing; one was one and one half years off; and one, in 1924, seems to have been two and one half years off. However, this first cycle has a double bottom, both lows were of equal depth; the second low was only half a year away from perfection.

On the average, the 6-year cycle in Youngstown Sheet and Tube Company sales has a strength of 23% above trend at crest, 23% below trend at trough. However, as crests and troughs fall between years, only 2/3 of this amplitude will show in the annual figures.

Bear in mind that these observations are not an attempt to forecast the sales of the Youngstown Sheet and Tube Company. Many other factors enter into the situation. These are trend, various random fluctuations, and other cycles. The 6-year cycle does, however, suggest that the years 1956 and 1957 are more likely than not to be below trend. *ERD.*

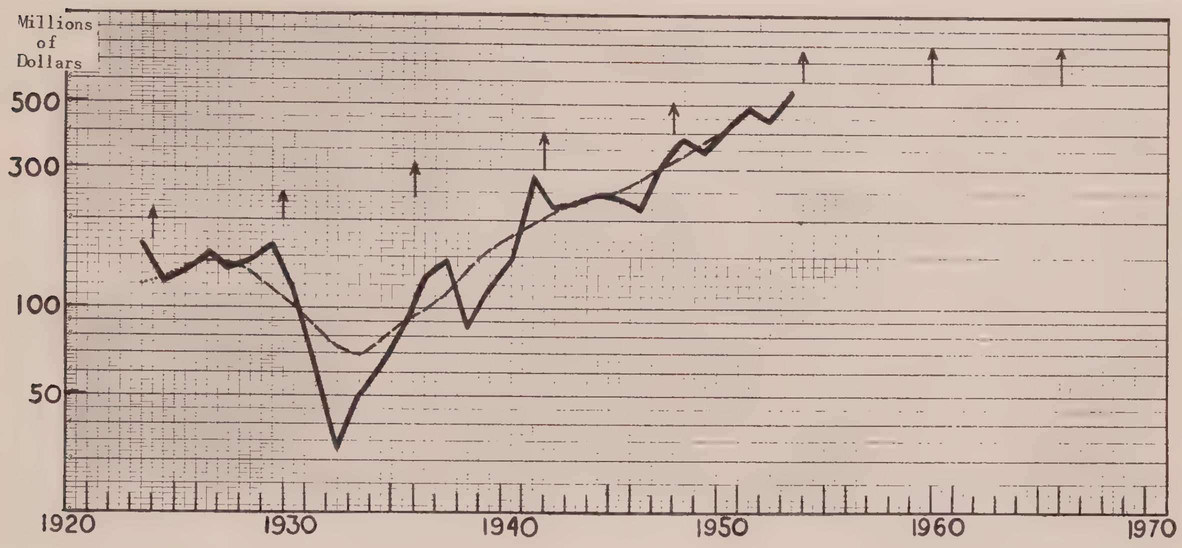


Fig. 1. Youngstown Sheet and Tube Company Net Dollar Sales, 1921—1953, together with a six-year moving average trend (first three values estimated). Arrows indicate time of ideal high of six-year cycle. Ratio scale.

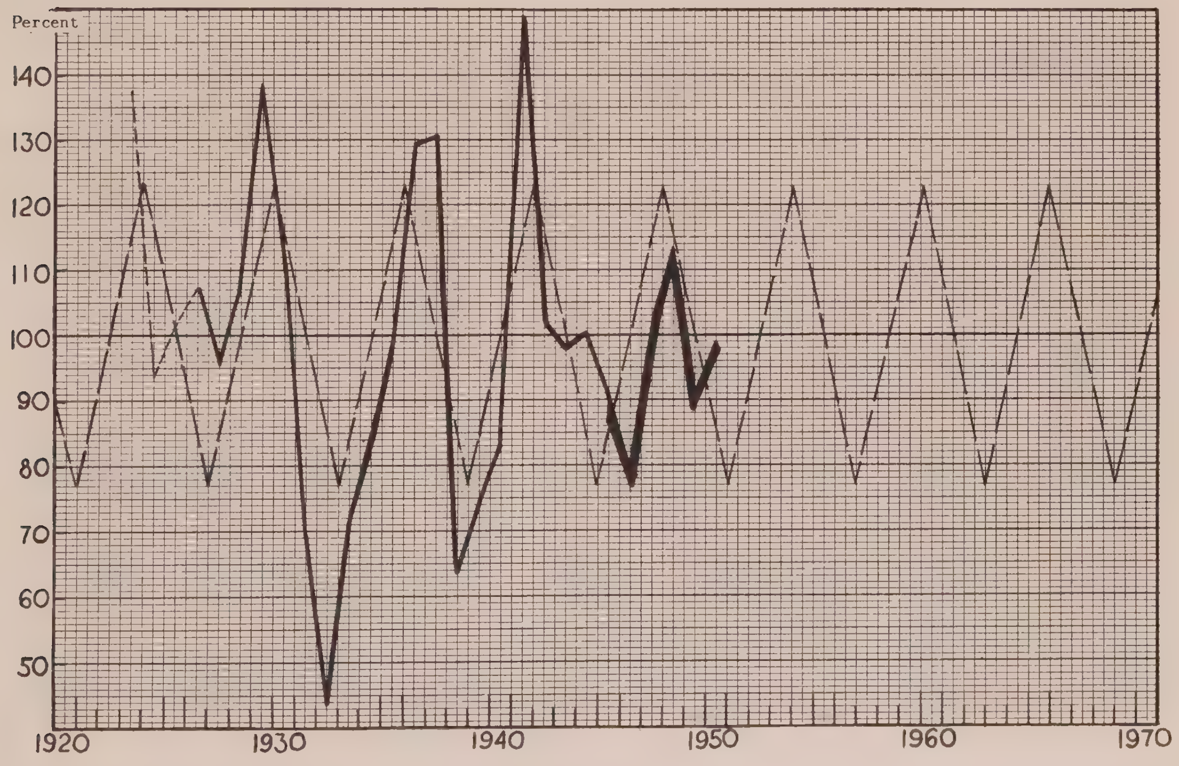


Fig. 2. The six-year cycle in Youngstown Sheet and Tube net dollar sales. Deviations of the actual sales from trend. Bold line shows how the forecast has worked out since this cycle was discovered. Broken zigzag line diagrams the 6-year cycle.

THE 6-YEAR CYCLE IN MONTGOMERY WARD AND COMPANY SALES

FIVE more years of figures enables me to revise the timing of the six-year cycle in the net sales of Montgomery Ward & Company. It now looks as if the original timing of both highs and lows was off by about half a year. The revised timing is used in both Figs. 1 and 2 on the opposite page.

Fig. 1 charts net sales from 1921 through 1953. Little arrows, exactly six years apart, have been added to help you to see the crests of the various six year waves more easily.

The trough normally due in 1950-51 was distorted by something—perhaps Korean War scare buying.

The arrow suggests a peak, relative to trend, due about 1953-4. Instead, 1953 records the third consecutive year of decline. Something would seem to be wrong, either with the six year cycle or with Ward's sales.

The six-year cycle rides on the trend just the way an ocean wave rides on a ground swell. It is a cycle *relative to trend.* Total sales represent cycle and trend together. If trend went down more than total sales went down, the cycle is still operating.

There is no way of knowing whether the cycle has failed or whether trend has gone down more than appears on the surface. However, I lean to the latter view because in other series of figures the six-year cycle is continuing to operate just as well as ever.

Fig. 1 also shows trend up to 1950. It will be three more years before we can know for sure what trend is for 1953. It will thus be three more years before we can know for sure how the cycle is operating.

If we blindly assume that the six-year cycle is continuing it is very easy to compute trend. Trend is what is left when you adjust for the cycle. However you cannot use trend determined this way to tell you that the cycle is continuing.

You must base your belief in the validity of this cycle in these figures on how it has behaved in the past. Available figures give us five highs and four lows. Of the five highs, three came within a half year of perfect timing; two were off by a year and a half. As for the lows, we cannot yet be sure of the first one or the last one. However, for the four lows where we can be sure, all came within half a year of perfect timing.

Perfect timing for crests is midway between 1923 and 1924 and every 6 years thereafter. Lows come three years after crests. This timing puts the last crest ideally at the end of 1953. The next low is due ideally at the end of 1956.

The 6-year cycle in Montgomery Ward & Company net sales has an average strength of about 15% above and below trend. However, as crests and troughs of this cycle come between years rather than in the middle of years, the annual figures will show only about two thirds of this strength. That is, in annual figures we have, ideally, two years 10% above trend, one year on trend, two years 10% below trend, one year on trend, and repeat. All other values are distortions of the cycle due to randoms other cycles, and trend.

Fig. 2 shows percentages that the actual values are above or below trend. Values that have become available since the cycle was discovered are shown by a heavy line. The broken zigzag diagrams the 6-year cycle.

The cycle in Montgomery Ward sales is due ideally for its next trough midway between 1956 and 1957, if the six year cycle continues to operate. *ERD*

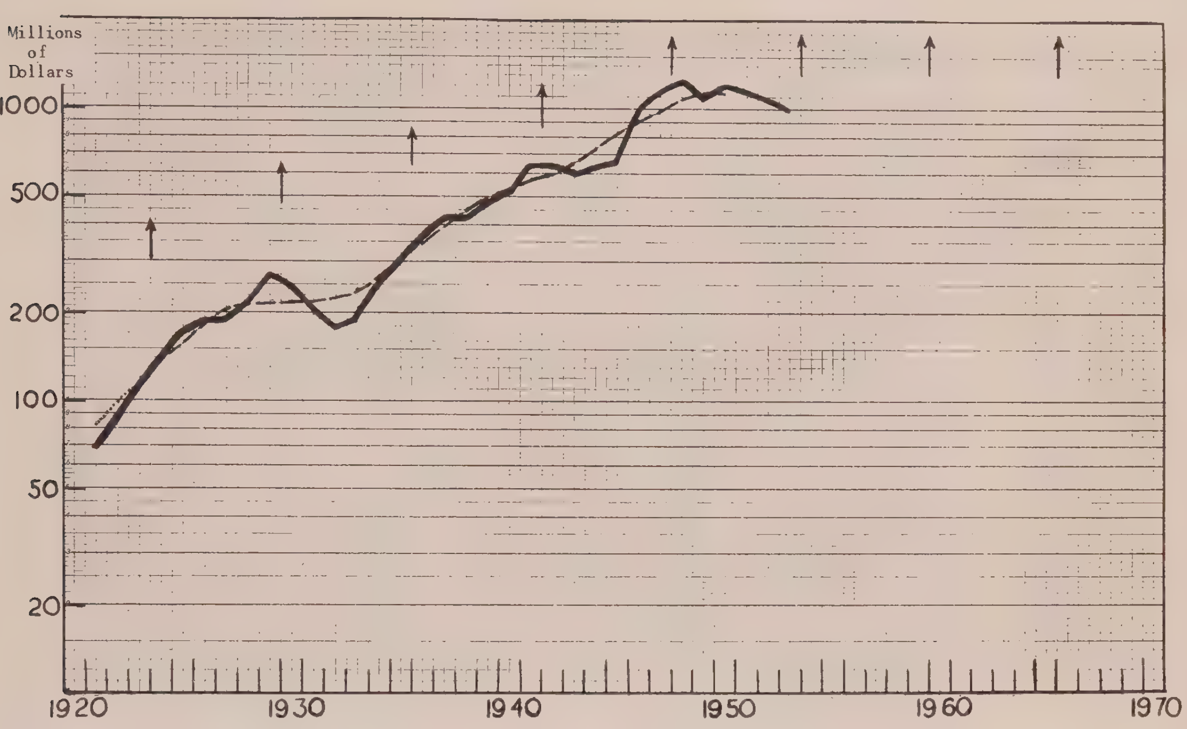


Fig. 1. Montgomery Ward and Company Net Dollar Sales, 1921--1953. Together with a six-year moving average trend (first three values estimated). Arrows indicate time of ideal high of six-year cycle. Ratio scale.

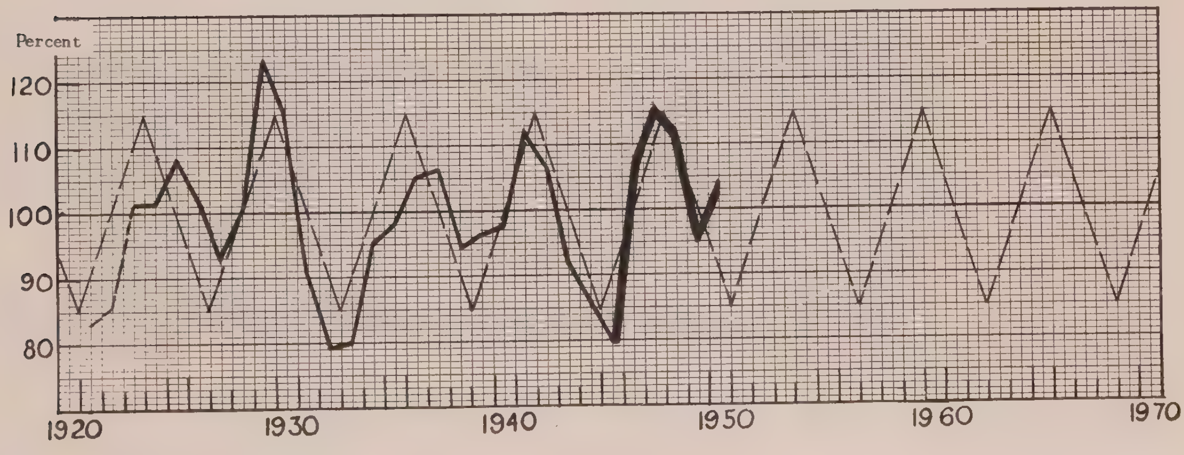


Fig. 2. The six-year cycle in Montgomery Ward and Company net dollar sales. Deviations of the actual sales from trend. Bold line shows how the forecast has worked out since this cycle was discovered. Broken zigzag line diagrams the 6-year cycle.

THE MODIFIED GEISINGER INDICATOR

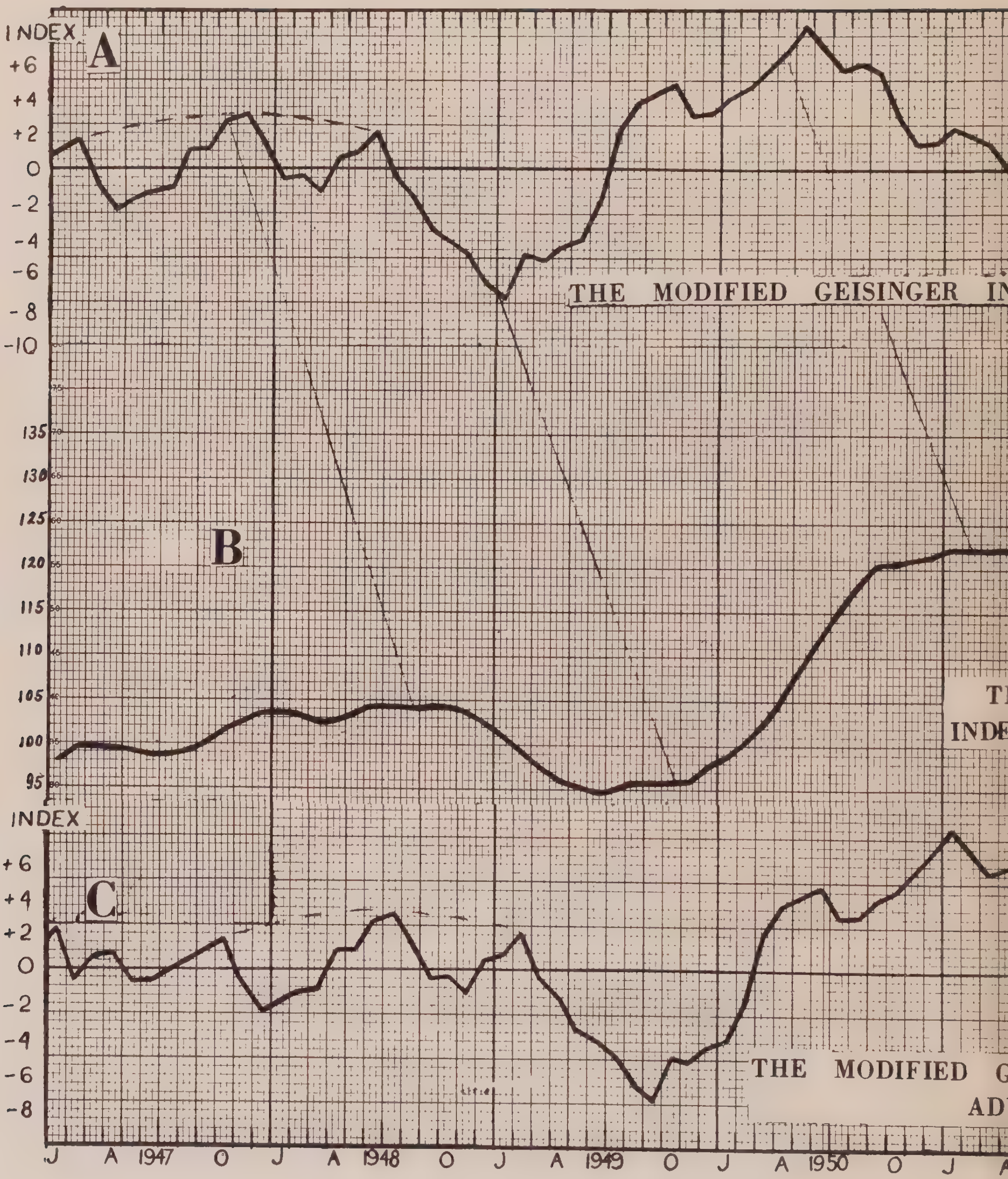
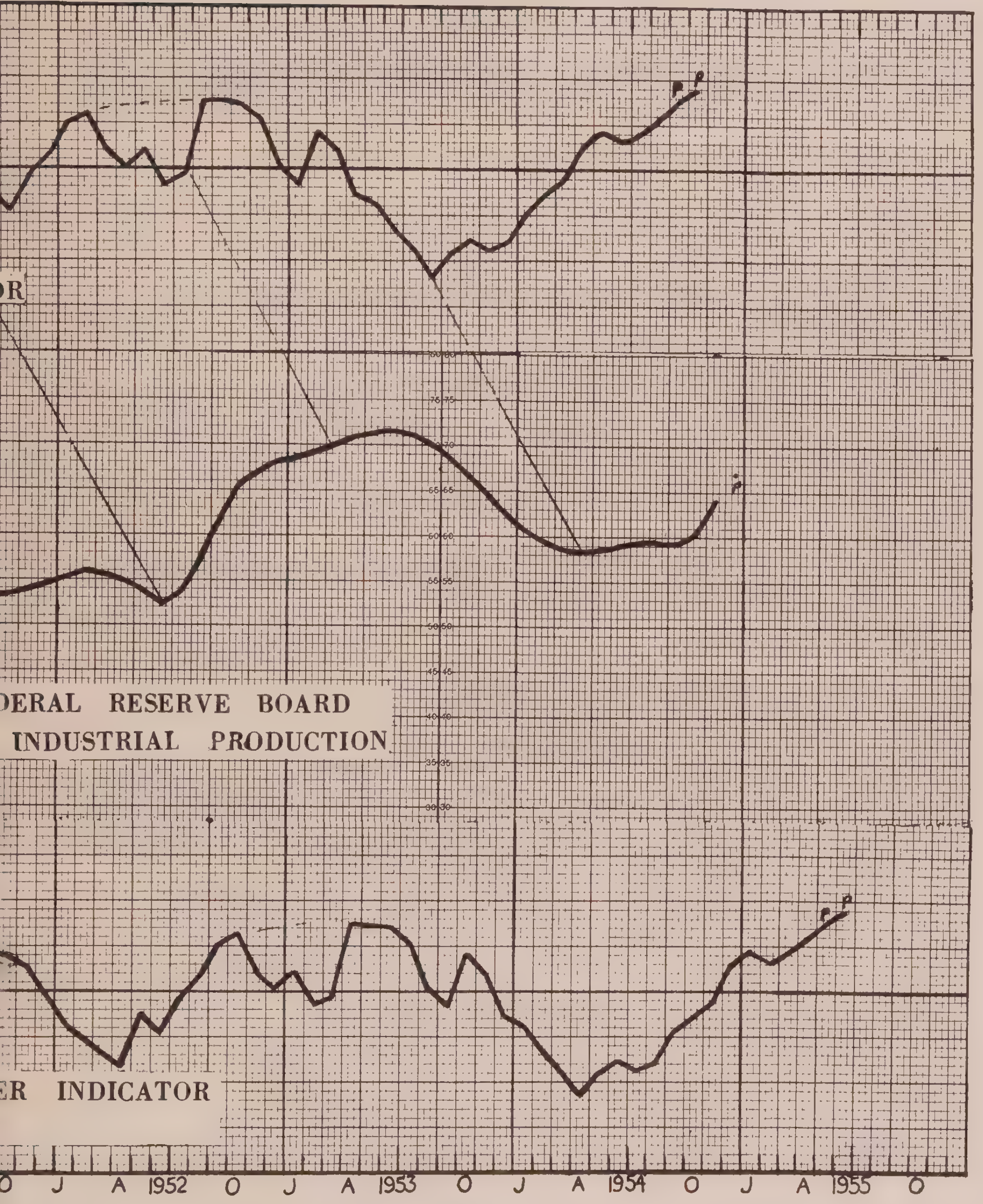


Fig. 1. Curve A. The Modified Geisinger Industrial Production Indicator Curve. This curve is derived from certain figures which are published monthly in the *Survey of Current Business*. It tends to turn about 8 months before the Federal Reserve Board Index of Industrial Production.

Curve B. The Federal Reserve Board Index of Industrial Production adjusted for seasonal variation and smoothed by a 3-month moving average. The value for the latest available month is shown by a dot.

Curve C. This Curve is the Modified Geisinger Industrial Production Indicator Curve advanced by 8 months. This process projects part of the curve into the future. If the relationships of the past continue, the projection gives some hint of what may happen to the Federal Reserve Board Index of Industrial Production (Curve B).

OF INDUSTRIAL PRODUCTION



THE FORECAST

The Modified Geisinger Indicator continues the advance it began in August of 1953. The turn which this Indicator made in August of 1953 foreshadowed by eight months the advance in the Federal Reserve Board Index of Industrial Production which began April 1954. The continued advance of the Indicator suggests a continuing increase of industrial production until at least June of 1955. E.R.D.

Additions to the Library

"The Study of Epidemic Diseases Among Wild Animals," by Charles Elton, reprinted from *The Journal of Hygiene,* Vol. XXXI, No. 4, 31 October, 1931, 12 pages, 1 table. Gift of University College, Oxford.

Charles Elton is the Director of the Bureau of Animal Population at Oxford.

To abstract the contents of this paper I cannot do better than to quote its summary:

1. Outbreaks of epidemic disease are common in populations of wild animals, including species little influenced by contact with the diseases of human beings or domestic animals.
2. Such epidemics form one of the commonest factors responsible for fluctuations in numbers of wild mammals.
3. An attempt is made to summarize the available published records of such epidemics (Section II), while certain unpublished records (Communicated to me by naturalists) are contained in an Appendix.
4. Little is known of the causes of these epidemics except in the cases of plague and tularaemia.
5. The fluctuations in numbers of some wild mammal populations are sufficiently regular to make the forecasting of epidemics possible. This method is already applicable to wild mice.
6. Mouse periodicities are discussed in detail, with special reference to epidemics and their causes, which are mainly obscure (Section III).
7. Development of the forecasting methods described will make possible the prediction of many other wild mammal epidemics, and render intensive pathological and epidemiological studies more practicable than they have hitherto been.

"On the Investigation of Cycles and the Relation of the Bruckner and Solar Cycle," by A. Streiff, reprinted from the *Monthly Weather Review,* Vol. 54, No. 7, July, 1926, 9 pages, 8 figures.

"Notes on Estimating Run-Off," by A. Streiff, reprinted from the *Monthly Weather Review,* Vol. 56, No. 3, March, 1928, 2 pages, 1 figure.

Mr. Streiff is the hydraulic engineer of whom I wrote in the Director's Letter for December.

The two papers cited above are related.

The first one gives a full description of Mr. Streiff's methods of cycle analysis. The second one applies these methods to a particular problem.

Mr. Streiff's methods of analysis permit the cycles to vary in length and in strength from wave to wave. I shall tell you more about his methods sometime in the future.

In the meantime however, if you are interested, I suggest you get hold of these two papers. Any good library should have them. Or you can buy them for 25¢ each from the Superintendent of Documents, Washington 25, D. C. Ask for the Monthly Weather Reviews of July 1926 and March 1928.

● ● ●

"A Concept of Possible Mechanisms Underlying Unexplained Congenital Defects," by Charles C. Chapple, M.D., reprinted from the proceedings of the spring conference of the Child Research Clinic of the Woods Schools--April, 1949. 12 pages, 2 figures. Gift of the author.

EXCERPTS FROM

CYCLES

THE SCIENCE OF PREDICTION

(CHAPTER XV and CHAPTER XVI)

by EDWARD R. DEWEY
Director, Foundation for the Study of Cycles

and EDWIN F. DAKIN
Associate, Foundation for the Study of Cycles

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XV

Postwar Trends

BEFORE INTERPRETING more specifically the major rhythms we have available for examining postwar probabilities of the near future, we may well review some of the facts we now know about the basic trends around which the rhythms move — trends established in America's economy which in all probability will continue:

1. As the trends in so many instances show, the United States has now achieved what some commentators have called " maturity," and, to a greater or lesser degree, relative stability in fundamental or underlying aspects of life where once there was rapid growth.
2. For many years now the nation's land area has been constant. The area in farms fluctuates, but basically is no longer increasing. Our population is still increasing but at a decreasing rate, and the peak is apparently just ahead of us. Our foreign trade seems to have passed its peak and — except as we give things away — would seem due for the future to maintain no more than the levels reached twenty years ago.
3. Some indices, like railroad mileage, have actually started down.
4. Manufacturing activity is still increasing, but at a decreasing rate. And some basic industries, such as steel, seem to be reaching the summit.
5. Depressions when the national trend shows " maturity " — even depressions that in earlier times would have seemed unimportant — will be felt deeply.

This is a brief statistical picture of the society we live in, of the milieu in which we as individuals must create our life. One could possibly wish something else, as did Oscar Wilde, mourning that he was a Greek born out of his time. On the other hand, it is natural, sound and inevitable that at some point growth of all things slackens and then stops. Every organism — and society *is* an organism in at least one sense, and so is each of its institutions — carries in its very form of life the limitations of its growth.

What we know about the supplies of some of our major mineral resources reinforces what our trend charts tell us. World War II, for instance, reduced our known natural oil supplies to unprecedentedly low levels. Our resources of iron and copper were similarly reduced to the point where we shall soon be competing with other nations for foreign supplies. In many respects, the long-term postwar problem will be not a question of how to maintain wartime levels of income — but rather how to maintain even prewar levels. As Bernard M. Baruch said before the war ended:

> In our domestic readjustments alone we face the greatest task in history. Nothing comparable to it has ever been faced before. Few seem to realize how drastically our war is draining our raw material resources — especially American oil and American metals — or what the impact will be from our high debt structure.
>
> After the war the great raw material reservoirs, to say nothing of the great manpower centers, simply will not be within the United States. The principal natural resources of the world will be in other nations. *The bedrock fact is that after this war the United States will face a struggle to remain the first power in the world. It will not be easy for America to hold that place.**

Thus, for the United States the upper limits of growth seem already to press down on us from many and various directions. Until this tendency of our growth to proceed at a decreasing rate is demonstrably changed, it is sound procedure to expect its continuance.

The patent commissioner who wrote in the 1880's that everything worth while had been invented, and that the Patent Office might as well be closed, made just one mistake. He *reasoned* out what *ought* to happen. He ignored the trends. The reasons he selected as a basis for his conclusions — in a time when the trends were of course the reverse of today's — had a scope exceedingly finite. Reasoning will always be similarly limited in its resources, particularly when applied to phenomena of which we ourselves are a part. To look dispassionately — that is to say, statistically — at what has been happening, what is happening, and what will happen if present trends continue, helps to avoid at least one common pitfall of logic. And to know how fundamental a revolution must be, to permit the establishment of new trends in an environment, should obviate another pitfall in wishful thinking — something to which the American temperament is prone.

It is perhaps typical of our lack of needed progress in the social sciences that even the rate of growth of a nation can still be a matter of opinion subject to political argument and commercial ballyhoo. In the advanced year of 1944 there appeared a laudably cheerful advertisement of a great agency, for instance, telling first how Mr. Clarence Birdseye made himself millions after various shortsighted investors had turned him down, and then went sweeping into a patriotic peroration, criticizing those who see in our fixed land frontiers a limit to our national growth. The advertisement branded such thinking as unworthy of the American tradition, and placed upon American business the burden of disproving this reasoning.

Doubtless this is all noble sentiment, and ideal for after dinner speeches. But those who proceed to plan their business future on the *probability* that our industries generally will continue growing hereafter at the rate pursued in the past, may be due — with their creditors — for a sad awakening. Mr. Birdseye — or others like him — will undoubtedly go on thinking up inventions (though there will probably be relatively fewer inventions, as our text shows); and he and some others will undoubtedly make some new millions, and manage to keep a small part of them after the government gets through taking the largest portion in taxes to meet the interest on the national debt. But one swallow, here or there, makes no summer.

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* Italics supplied. In a copyrighted article by Henry J. Taylor from the New York *World-Telegram*, Feb. 22, 1944.

Actually, even our rate of growth in *creative* capacity has declined. Dr. Pitirim A. Sorokin, chairman of the Department of Sociology at Harvard, has compiled an effective analysis to demonstrate the decline. He says, with italics that are his own:

> We observe, first, that with the end of the nineteenth and the beginning of the twentieth century *the rate of increase of discoveries and inventions definitely slowed down;* second, that between the outbreak of the World War of 1914 and the year 1920 *even the absolute number of discoveries and inventions declined;* third, that *the climax (in number and importance of discoveries) in most of the exact sciences was reached not in the twentieth century, but either in the nineteenth or (for mathematics) the eighteenth century.* The following figures illustrate this movement:

Period	*Total Number of Scientific Discoveries*	*Total Number of Technical Inventions*	*Total Number of Geographic Discoveries*	*Grand Total*
1791–1800	149	113	7	269
1801–1810	228	128	6	362
1811–1820	286	157	13	456
1821–1830	388	227	16	631
1831–1840	441	313	9	763
1841–1850	534	356	9	899
1851–1860	584	423	13	1020
1861–1870	553	424	15	992
1871–1880	635	490	17	1142
1881–1890	663	477	13	1153
1891–1900	625	482	2	1109
1901–1908	552	309	1	862

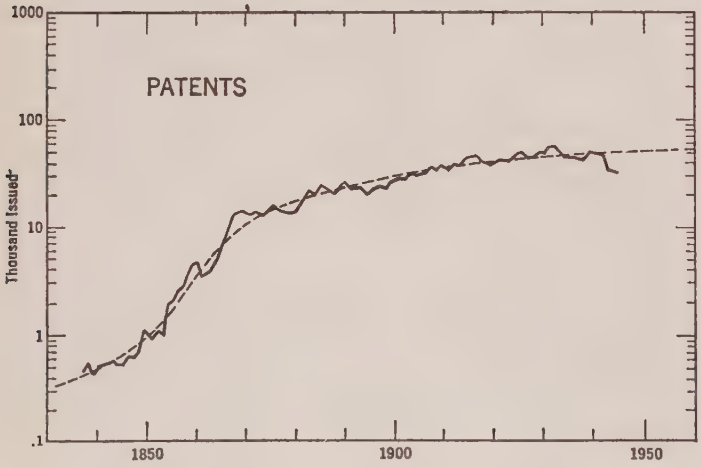

FIG. 1. U. S. PATENTS ISSUED, 1837–1944
A trend is shown, projected tentatively to 1960. *Ratio scale.*

Figure 1 shows how Dr. Sorokin's analysis is borne out by the trend in the number of U. S. patents issued.

Dr. Sorokin adds, in his comment on the present state of the science that thus is faltering:

> Who, save almighty God, could comprehend its infinite chaos of "facts," especially since we don't know which are relevant and which irrelevant? In the face of this difficulty we elaborate endless mechanical indices and bibliographies, digests and abstracts, indices of indices, bibliographies of bibliographies, digests of digests, and abstracts of abstracts. Human life is too short to master such an overwhelming and indiscriminate agglomeration of facts. . . .
>
> The more economists have tampered with economic conditions, the worse they have become; the more political scientists have reformed governments, the more are governments in need of reform. . . . Despite all the natural and social sciences at our disposal, we are unable either to control the socio-cultural processes or to avoid the historical catastrophes. . . . Neither happiness, nor safety and security, nor even material comfort has been realized. In few periods of human history have so many millions of persons been so unhappy, so insecure, so hungry and destitute, as at the present time. . . . Wars and revolutions, crime, mental disease, and other evidences of deep-seated social maladies flourish apace, some of them on a scale hitherto unknown. We are witnessing a veritable "blackout" of human culture.*

Sorokin is quoted here at less length than he deserves, in view of the fact that he has boldly lifted a warning voice in a nation where cheap optimism is so readily sold by the yard.

Well, says an objector, let's grant it's all true, as of the past. But aren't these facts evidence that we are probably on the verge of launching an entire new trend on the stage of history? What about the theory that World War II was the final explosion of capitalism? Maybe the explosion had to occur to destroy the old social organism that was through with growing? Maybe we are now about to develop an entire new trend in American growth? Maybe the fact that America is an island in a world of ruins is a sign of it?

It would undoubtedly be possible to conjecture that the trend lines we see revealed in basic American industries stand for the life pattern of what we call capitalism, and that the explosion of capitalism in our time means that new trends are to be born. A socialist or communist, seizing on such an idea, could then propose the adoption of his own particular economic ism as a method of initiating a new growth pattern, and a new era of industrial expansion.

But the idea is of doubtful validity. True, Professor Schumpeter seems to entertain, on occasion, the hypothesis that the rhythms we can trace in the economic organism are characteristic of capitalism in operation. Kondratieff suggests a similar postulate. The fact is, however, that we can trace the major rhythm — the 54-year wave — far beyond the birth of capitalism, back to the age of feudalism. The life of capitalism, however you define it, has been certainly not more than 150 or 200 years; the persistence of the rhythm has been long by comparison. Thus, the waves we see in operation can hardly be merely a characteristic of capitalistic phenomena, however you define them.

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* From *Crisis of our Age* by P. A. Sorokin published and copyrighted by E. P. Dutton and Co., Inc., New York. Copyright 1941. (pp. 126–131)

Quite similarly — and this may comfort some conservatives — it seems equally doubtful that the trend lines we see in our society are an essence of the capitalistic organization of this society. If they were, then something radical should have happened to those trend lines around 1933, when capitalism *as we had known* it in the United States was transformed into something rather different (much as it underwent transformation in France, Germany, and England).

The conclusion, conversely, can hardly provide fodder for professional reformers. Whatever may be the influence that has slowed down the rate of growth in our society, there is no reason to believe that the *imposition* of any other economic system would of itself suffice to establish a new growth trend there.

Capitalism in its fullest sense has been only a convenient economic word used to describe a whole agglomeration of habits, relationships, thinking patterns, and methods of social procedure. This agglomeration was an organic growth — it was never planned, never imposed by any superminds. No one thought it up, no one sat down to invent it; it sprang from the community spontaneously, as part of a necessary mode of expression at a given point of time.

If a new growth trend is eventually to make its appearance on top of the old one in our society, it may well be *accompanied* by a new kind of economic expression which — when historians survey it in retrospect — they will describe as an economic "system." But this economic system, so called, will hardly be the *cause* of the new trend. Rather, it will be an expression or outcome of it. To understand this, one need only understand man for what he truly is — no mere creature of economics, but one for whom economic activity is only one form of expression among many.

If, with all these reservations, we still cling hopefully to the conviction that a new growth pattern is going to get started in our nation, we are wholly within our rights. Germany seemed to have launched herself on a new trend in the nineteenth century. Russia began one in 1917.

But — we must be warned. We now know enough about trend lines to realize that old ones merge into the take-off of new ones *only* when fundamental, even revolutionary, changes have occurred in the environment and its organization, and perpetuate themselves. Even though our science cannot tell us *when* a new growth pattern will begin — or if the pattern ever will — it does tell us this much. Few really want such a revolution.

Remember Pearl's Drosophila bottle. Imagine for a moment that we Americans are the Drosophila. We are reaching the upper asymptote of our curve. The invention of a few new gadgets by industry — indeed, the invention of a whole new industry itself — is a force in no way adequate to change the relationships in our bottle. We must have a whole new bottle. And if we are among those who call for having the postwar national income maintained at some level around 150 billion dollars — or the equivalent thereof in 1939 values — then we are necessarily demanding some sort of completely new social bottle into which the American nation is going to move.

Now, we can predict that this will happen, if we wish, because science has no evidence with which to gainsay us. It can even offer us a little helpful data, such as the fact that in recent wartime years the birth rate has leaped upward in the United States, as in many other parts of the world. This deviation from one long-established trend line has been assumed by most observers to be merely a temporary phenomenon, a wartime distortion. But it could possibly be something much more significant for the future. We are entitled to our faith and hope. We can believe in the birth of a new world, if we wish.

Only we must be prepared to face the consequences, whether we are right or wrong. If we are right, we still face enormous upheavals (for the ending of the "old" capitalism has as yet not changed our lives much), and some of us are perhaps going to be badly jolted. If we are wrong, we may court serious personal disaster in betting on our judgment in the market place.

If we make this assumption, perhaps we should go further, and ask ourselves whether our complex society could withstand another such depression and meanwhile maintain orderly processes in operation. If our answer is a tentative No, then we may expect to get our social upheavals anyway. In which event the old trend lines as we have known them might eventually be superseded by the beginning of new ones, regardless.

These speculations are entered here primarily to demonstrate that our economic charts — however helpful — will by no means suffice to answer all the questions on which judgments of the future must be based. We can synthesize our rhythms to portray the future of a given corporation, without too great a margin of error. But in estimating the future of a nation we are certainly dealing with biological and psychological forces on a scale too great for completely accurate measurement with our still primitive instruments. In reading the instruments we have available, much allowance must be made for error.

Those instruments can neither affirm nor deny — as we have seen — that the trends maturing in the American economy may be in process of being superseded by new ones. Apparently no conscious planning will in itself serve to change whatever trends are now established. Apparently individuals can do little enough to create or hasten developments that must spring from the heart of the whole social organism. We can figure out where we are — making due allowance for a margin of error, but that gives us no recipe for getting elsewhere.

Some economists who do not quite realize this are responsible for much of the literature of recent times which repeats endless exhortations to be up and moving to some place where we aren't. In the words of John Chamberlain, eminent book editor of the *New York Times:*

> There are two kinds of economic piety at large in the world today.

The old school piety consists of variations on the refrain, " We must have free enterprise," or " We must preserve the American way of life." The newer piety consists of saying, " We must stabilize the economy at a high level of consumption and employment." In each case the appeal is purely hortatory; it does not tell you how to get from here to there. The more I read, the more I marvel at the reputations that have been made by repeating one or the other of the pious exhortations.*

Mr. Chamberlain is, of course, quite right. But it is possible to go further, and say that the economists of both the hortatory schools which amaze him err not in failing to do the impossible — for they cannot give a practical recipe to achieve the ends they recommend. They err rather in failing to recognize the real limitations of their approach to the problem, and in failing to recognize this problem's real essence. For it is apparently a problem basically biological in its character; and if there is a sound solution to be found in any form of traditional human logic, no expert has as yet produced the key. Churchmen, convinced that the ultimate key will be found in a sweeping religious revival that will spiritually reform the worshipers of today's paganistic materialism, have at least as much logic on their side as those who propose materialistic solutions.

If the interpretations here are correct, then ordinary political and economic tinkerings will not get the problem resolved — as Sorokin says clearly. The community as a whole will ultimately give us the answer, whether in one way or in another. Meanwhile no individual, while he waits to see what that answer will be, is going to effect any " plan " that will really " save " the nation. But he can certainly, with some foreknowledge of what the problem is all about, be in a better position to assay the value of the various plans that will be offered in the future. He will be able better to understand the fallacies inherent in the multitudinous nostrums. He will doubtless be able to help his neighbors more sympathetically, as they find themselves saddled with heavy problems not entirely of their own making, in these times of world-wide misery. And, equally important, he should certainly be able to help himself through understanding some of the limits of the possibilities that surround him.

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* *New York Times,* March 11, 1944.

XVI

Postwar Rhythms

N ANALYZING and projecting the trends, both for the nation as a whole and for certain basic industries, this study has sought to nake clear that a declining rate of growth elevates the " cycle " to reater importance for business and industry than ever before in ur history. Limited as our knowledge of such rhythms still is, here are basic data to help us face the problem of the postwar era vith more than mere guesswork. We have a tool whereby, for any iven series of figures, we can get a fund of additional knowledge or guidance in facing the problems of any specific organization.

Obviously no individual, in times like ours, can rely wholly on noney saved to carry him through any future periods of social or conomic crisis. In other times, if faced by evidence that deflation ay ahead, he could unerringly have put his holdings into money nd obligations repayable in money. But since 1929, governments ll over the world have learned how to *demonetize* money. Our wn government in 1933, for instance, called in all old dollars — ust as some European countries have recently done; it can readily all in the current issue when it pleases, and/or make it unspendale. It has learned through experience how to restrict the withrawals from savings and other accounts. It can delay payments n bonds due. It can, and now does, control the export and import f dollars.

In other words, various monetary controls devised by Dr. Schacht or the mark have already been quietly applied in various ways to he dollar, and no American man planning for the future can safely ssume that he will ever again be able to do with dollars exactly vhat he will. In actual practice (if not in theory!) sovereign states oday hold the view that currency and credits are the origination f the state, and thus are the state's property, to be held and used y individuals only so long as that use serves the state's purposes — r, at any rate, does not come in conflict with them.

Nor, for that matter, do present tendencies and trends in the conomy suggest future opportunities for freedom that once preailed in the uninhibited enjoyment of any kind of real property. Metropolitan properties, for instance, will doubtless continue to e milked by high real estate taxes for the support of unemployed ity masses. Grim realty taxes, combined with rent controls, could ltimately prove almost confiscatory. Thus, income-producing real state is no longer a perfect hedge for inflation, and in a time of eflation may have questionable merits indeed.

Nor are bonds a perfect refuge for savings any longer. The ultimate value of government bonds is something for conjecture. Of some corporate bonds it is possible to say that in a period of national deflation they have been demonstrated to be as questionable an asset as stocks. And stocks now mean to the investor only the right to participate in what is left after management takes its salaries and expenses and government seizes what it will.

Some of the tax laws that weighed down the American economic outlook during the war years have been changed — but it is probably too much to hope that they will undergo, in any foreseeable future, the wholly drastic change that will restore past relationships.

Thus the man seeking to protect his own future against the turns of the economic wheel must nowadays face difficulties of a rather unexampled kind. He will doubtless wish at least to reduce his dollar indebtedness to the minimum, on the theory that freedom from debt at least means freedom of action in time of emergency. In an era when freedom of choice has been steadily whittled down to the vanishing point for almost every individual in terms of ultimately significant values, freedom from debt is one that can still be chosen. In the era ahead of us it may be valuable to anyone who esteems his freedom dearly.

The foresighted individual will doubtless know that long-term leases, contracted for when properties are at their peak price, are much the same as long-term debt; mortgages inevitably are debt, regardless of terms of payment; and even life insurance policies — unless fully paid up — are a form of debt which, until paid up, can often cost the insured much of his equity in the policy if he fails to continue premium payments and must let the insurance lapse. But these are all details that interested individuals will find more adequately discussed in numerous other quarters. Here it is sufficient to note that hedges to protect principal in periods like the present will continue hard to find, while the returns on capital in general bid fair to continue at around low levels.

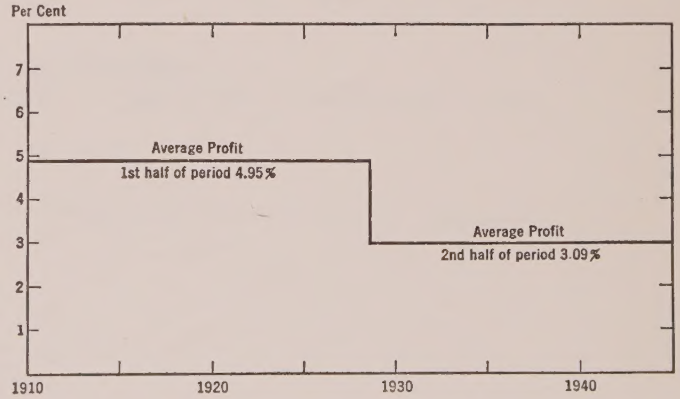

Fig. 1. Profits in the Steel Industry, 1901–1945

(From data furnished by the American Iron & Steel Institute.)

For purposes of comparability the chart shows averages for two 18-year cycles, each containing a war. The situation in steel is representative for many industries.

In an economy where the rate of growth is rapidly approaching zero, and major underlying rhythms in the expression of energy are also on the decline, what would one expect to meet as a major symptom of such lowered vitality? In a profit economy, it could well be a declining rate of profit. And that is exactly what we have met, over a long period of years, in the United States of America. See Fig. 1.

The judgments here, and throughout the text, rest on three assumptions that are basic in this treatise, and are worth emphasizing again:

1. That a rhythm can be considered to be significant only if it has repeated itself so many times and so regularly, that it cannot reasonably be the result of chance — and

2. That the rhythms which have evidenced themselves clearly in the past, in our economy, continue to operate repetitively — and

3. That the trends which have been traced in our great basic industries continue on their established courses.

As has been noted, factors like war — though not (in the past) ultimately changing either trends or rhythm patterns — can for a time emphasize, magnify, or distort a rhythm. There are doubtless, yet unknown, other factors besides those appearing clearly in wartime which may effect the same end. It may be that such a factor will show up in conjunction with the postwar rhythms, to modify their operation. But the data here do not suggest the likelihood of the possibility.

It may also be stressed again that our knowledge of rhythms is still in its infancy. Concerning their reality, some high authorities have testified to conviction; as to the exactness of the timing of the rhythms, some of the greatest authorities still disagree. Nor, of course, can any research assert that a rhythm — however real in the past — will undoubtedly continue. Again, it must be noted that individual industries and companies and commodities have their own patterns, which must be determined one by one. With all these qualifications, the merit of knowing what probabilities the rhythms indicate is obvious.

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